

**REMARKS**

**Allowed Claims**

Applicant acknowledges with appreciation allowance of claims 23-26.

**Allowable Claims**

The Office Action deems claims 2-9 and 16 as allowable if rewritten in independent format to include the features of the claim(s) on which they depend.

Allowable claim 2 depends on claim 1, and further recites that the protected acidic group comprises an acid-labile group. Rather than rewriting allowable claim 2 as an independent claim, claim 1 is amended, as indicated above in the listing of all pending claims, to include the feature of claim 1: the protected acidic group comprising an acid-labile group. And claim 2 is canceled.

Further, allowable claim 3 is rewritten in independent format to include features of original claim 1, on which it depends. Similarly, claim 16 is rewritten in independent format to incorporate the features of original claim 1 on which it depends. Hence, claims 1, 3 and 16 are believed to be in condition for allowance.

Moreover, claims 4-9 depend, either directly or indirectly, on claim 1 or 3. Hence, these claims are also in condition for allowance.

**Rejections Under 35 U.S.C. 102(b)**

The Office Action rejects claims 1, 10-15, 17-22 and 27 as being anticipated by U.S. Patent No. 4,336,319 of Nagashima.

As discussed above, claim 1 is amended to incorporate the allowable feature of claim 2, and hence distinguishes over Nagashima and is in condition for allowance. Further, claim 10 depends on claim 1, each of claims 11, 13, 15 is rewritten as a multiple-dependent claim to depend on claims 1 or 3, claim 12 depends on claim 11 and claims 14 and 15 depend on claim 13. As both amended claims 1 and 3 are now in conditions for allowance, so are claims 10-15.

Claim 17, as amended, recites a method of processing a semiconductor substrate that includes coating the substrate surface with a photoresist composition having a resin binder, and an encapsulated material. The encapsulated material comprises inorganic core particles that are at least partially coated with a moiety having a protected acidic group *selected from the group consisting of an acid labile group and a photo-labile group*. The coated particles are dispersed within the resin binder. This is followed by exposing selected portions of the coated surface to an activating radiation to cause a chemical transformation in the exposed portions, and removing either the radiation-exposed or unexposed portions of the photoresist composition. The substrate surface is then plasma etched to generate a pattern thereon.

As acknowledged by the Examiner, Nagashima does not teach a photoresist incorporating encapsulated material comprising inorganic core particles that are at least partially coated with a moiety having a protected acidic group comprising *an acid labile group or a photo-labile group*. Consequently, Nagashima does not teach coating a substrate surface with such a photoresist, and hence it fails to teach at least one step of the semiconductor processing method recited in independent claim 17. Accordingly, amended claim 17 distinguishes patentably over Nagashima.

The independent method claims 18 and 19 are also amended in a similar fashion to recite that the protected acidic group is *selected from the group consisting of an acid labile group and a photo-labile group*. Hence, similar to claim 17, claims 18 and 19 are also patentable over the cited Nagashima patent.

Independent claim 20 recites a photoresist composition that comprises a resin binder, and an encapsulated material comprising inorganic core particles that are at least partially coated with a moiety having a *protected acidic group selected from the group consisting of an acid labile group and a photo-labile group*. The moiety is attached to the particles by one or more covalent bonds.

The arguments presented above apply with equal force to establish that independent claim 20 distinguishes patentably over Nagashima. More specifically, claim 20 recites that the photoresist includes inorganic core particles at least partially coated with a moiety having *an acid-labile or a photo-labile protected acidic group* – features not taught by Nagashima.

Each of claims 21 and 22 depends on independent claim 1, and further recite, respectively, that the particles have an average size ranging from about 1 nm to about 50 nm, and an average size ranging from about 1 to about 20 nm. As discussed above, claim 1 is in condition for allowance, and hence so are dependent claims 21 and 22.

With regard to independent claim 27, as indicated above in the listing of the pending claims, this claim, which is directed to a photoresist composition having a resin binder and an encapsulated material comprising inorganic core particles that are at least partially coated with a moiety adsorbed onto the particles, is also amended to recite that the moiety has *an acid-labile or a photo-labile protected acidic group*. Hence, the arguments presented above apply with equal force to establish that this claim also distinguishes patentably over Nagashima.

### CONCLUSION

In view of the above amendments and remarks, Applicant respectfully requests reconsideration and allowance of the application. Applicant invites the Examiner to call the undersigned at (617) 439-2514 if there are any remaining questions.

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Respectfully submitted,

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